



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/573,998      | 03/30/2006  | Claus Frohberg       | 65084.000017        | 9251             |

21967 7590 07/22/2008  
HUNTON & WILLIAMS LLP  
INTELLECTUAL PROPERTY DEPARTMENT  
1900 K STREET, N.W.  
SUITE 1200  
WASHINGTON, DC 20006-1109

|          |
|----------|
| EXAMINER |
|----------|

PAGE, BRENT T

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1638

|           |               |
|-----------|---------------|
| MAIL DATE | DELIVERY MODE |
|-----------|---------------|

07/22/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/573,998 | <b>Applicant(s)</b><br>FROHBERG, CLAUS |  |
|                              | <b>Examiner</b><br>BRENT PAGE        | <b>Art Unit</b><br>1638                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30,32 and 33 is/are pending in the application.
- 4a) Of the above claim(s) 24-30,32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Group I claims 1-23 in the reply filed on 02/29/2008 is acknowledged. The traversal is on the ground(s) that the cited prior art does not teach the technical feature of a class 3 branching enzyme. This is not found persuasive because the specification does not provide clear guidelines as to exactly what defines a class 3 branching enzyme, and therefore any branching enzyme comprising the two domains disclosed in the specification is considered to meet the limitations of the claims.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-23 are examined on the merits herein.

### ***Specification***

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. The Specification contains 11 hyperlinks, 4 in paragraph 47, 1 each in paragraphs 48, 49, 51, 209 and 306, and 2 in paragraph 208. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: There is no Brief Description of Figures in the specification. Furthermore there appear to be different Tables listed as Tables 1-3 that do not correspond with

Tables 1-3 in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a genetically modified plant cell comprising SEQ ID NO:3 or nucleic acid encoding SEQ ID NO:4, does not reasonably provide enablement for any modified plant cell with a reduction in activity of any Class 3 branching enzyme due to any genetic modification. The specification does not enable

any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The claims are broadly drawn to a genetically modified cell of any plant species, modified with any nucleic acid wherein any class 3 branching enzyme has a reduced activity in comparison with wild type plant cells, and genetically modified plant cells with any foreign nucleic acid that encodes an amino acid having as little as 50% identity with SEQ ID NO:4, or any foreign nucleic acid that merely hybridizes under unspecified conditions to SEQ ID NO:3 or a nucleic acid that encodes SEQ ID NO:4, or any antisense molecule for any class 3 branching enzyme or any ribozyme, or any molecule that leads to a cosuppressive effect for any class 3 branching enzyme and vectors, plants and methods of manufacturing transgenic plants comprising the multitudes of nucleic acid molecules broadly claimed.

In contrast, the specification only provides guidance for modifying a potato plant cell with a construct comprising a 625 bp fragment of SEQ ID NO:3 in the anti-sense direction followed by a 301 bp fragment in the sense direction, wherein the activity of a class 3 branching enzyme is reduced. The specification does not give guidance to any other constructs, or any other modifications of SEQ ID NO:3, or any other gene that lead to the claimed reduction in a class 3 branching enzyme.

### **Class 3 Branching Enzyme**

Applicants have defined a class of enzymes based on their identity to the potato-specific branching enzyme disclosed in SEQ ID NO:4. However, the specification does not detail any domains or any activity that is specific to SEQ ID NO:4 that would enable

Art Unit: 1638

one of skill in the art to recognize embodiments that are encompassed by the instant claims. In fact, the domains disclosed in the specification are common to all starch branching enzymes. Applicants have detailed several examples of enzymes purported to belong to both Class I and Class II branching enzymes, but disclose only SEQ ID NO:4 as Class III and no other examples that would provide guidance for classification other than a "higher degree of identity with the amino acid sequence shown in SEQ ID NO:4 than that with that of the branching enzyme BE I from maize (GenBank Acc: D11081) or with that of the branching enzyme BE IIb from maize (GenBank Acc: AF072725)". The specification does not acknowledge how to classify enzymes that belong to this category that have already been classified by Applicants as belonging to Class I or II. Nor does the specification acknowledge which particular features of the recited sequence are responsible for its classification. Without more specific guidance as to what constitutes a class 3 branching enzyme, Applicants are not enabled for modified plant cells that reduce the activity of any class 3 branching enzyme.

### **Hybridization**

The claims include embodiments of nucleic acids that hybridize under "stringent" conditions to SEQ ID NO:3. The specification discloses stringent conditions as "such as, for example, are described in Sambrock et al..." on page 42. Not only does the specification not limit guidance of stringent conditions to Sambrock et al which is but one example of said conditions, but Sambrock et al recite a variety of hybridization conditions, dependent upon application of which are considered stringent or non-stringent. The specification does not disclose so much as a single embodiment that is

defined by its hybridization to SEQ ID NO:3, and the specification, lacking guidance for specific hybridization conditions, does not enable one of skill in the art to practice the invention commensurate in scope with the claims as it relates to hybridization conditions.

### **Unpredictable Starch Phenotypes**

The synthesis of starch in plants is complex and unpredictable. In a review of the regulation of starch metabolism in plants Tetlow et al (2004 Journal of Experimental Botany 55(406):2131-2145) discuss the developments that help understand the regulation of starch metabolism in higher plants. Tetlow et al disclose that the function of any particular starch depends on the type of plastid it is synthesized in and the type of plant tissue it is derived from (see page 2131 Column 2, lines 3-5). Tetlow et al also disclose that only a few genetic variations that lead to known phenotypes are even known for starch branching enzymes as evidenced by the statement "To date, only mutations in SBEII isoforms give clear phenotypes, and in monocots this is confined to SBEIIb mutants" (see page 2134 second column, last paragraph). Furthermore the affect these variations have on starch derived from the endosperm is unpredictable. Tetlow et al disclose a mutant of SBEIIa that displayed a clear phenotype in leaf starch but showed no alterations in the storage starch of the endosperm (See page 2134 Column 2, last paragraph, for example). Tetlow et al further disclose that other genes are capable of affecting the expression of at least SBEIIb, but not all of these genes are known (see page 2135, 1<sup>st</sup> column, 3<sup>rd</sup> paragraph, for example). Without a clear guidance as to the specific genetic variation, it would be undue experimentation to

Art Unit: 1638

evaluate all genetic variations of all genes affecting the level of already established starch branching enzyme classes, let alone the newly defined class 3 branching enzymes that are even less characterized as broadly claimed.

It is also unpredictable what affect any anti-sense RNA will have on the expression of branching enzyme forms. Tetlow et al disclose that alternative splicing of a SBEII form in *Phaseolus vulgaris* causes alteration in the properties of the enzyme (see page 2135, 1<sup>st</sup> Column, 1<sup>st</sup> paragraph, for example). The art is silent on alternative splicing in SBEII forms in barley, but given the disclosure by Tetlow et al, it would be undue experimentation to evaluate all RNA fragments for their ability to affect the expression of SEQ ID NO:4. The effect of any length RNA molecule over any portion of the gene would be unpredictable.

Given the state of the art, the disclosure by Tetlow et al, lack of a working examples, and absence of guidance as discussed above and the unpredictability as discussed above, it would be undue experimentation for one of skill in the art to isolate and evaluate all exogenous nucleic acids that would lead to reduction of any class 3 branching enzyme as broadly claimed.

Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.



The claims are broadly drawn to a genetically modified cell of any plant species, modified with any nucleic acid wherein any class 3 branching enzyme has a reduced activity in comparison with wild type plant cells, and genetically modified plant cells with any foreign nucleic acid that encodes an amino acid having as little as 50% identity with SEQ ID NO:4, or any foreign nucleic acid that merely hybridizes under unspecified conditions to SEQ ID NO:3 or a nucleic acid that encodes SEQ ID NO:4, or any antisense molecule for any class 3 branching enzyme or any ribozyme, or any molecule that leads to a cosuppressive effect for any class 3 branching enzyme and vectors, plants and methods of manufacturing transgenic plants comprising the multitudes of nucleic acid molecules broadly claimed.

In contrast, the specification only describes a single construct comprising a 625 bp fragment of SEQ ID NO:3 in the anti-sense direction followed by a 301 bp fragment in the sense direction, wherein the activity of a class 3 branching enzyme is reduced. The specification does not describe any other constructs, or any other modifications of SEQ ID NO:3, or any other gene that when provided exogenously leads to the claimed function, namely a reduction in a class 3 branching enzyme.

### **Class 3 Branching Enzyme**

Applicants have defined a class of enzymes based on their identity to the potato-specific branching enzyme disclosed in SEQ ID NO:4. However, the specification does not describe any domains that are specific to SEQ ID NO:4 but not to the other classes of branching enzymes. Without a description of the defining characteristics of embodiments, one would not be able to determine whether or not Applicants are in

Art Unit: 1638

possession of the claimed embodiments that are encompassed by the instant claims. In fact, the domains disclosed in the specification are common to all starch branching enzymes. Applicants have detailed several examples of enzymes purported to belong to both Class I and Class II branching enzymes, but describe only one example (SEQ ID NO:4) as Class III and no other examples that would provide guidance for classification other than a "higher degree of identity with the amino acid sequence shown in SEQ ID NO:4 than that with that of the branching enzyme BE I from maize (GenBank Acc: D11081) or with that of the branching enzyme BE IIb from maize (GenBank Acc: AF072725)".

### **Hybridization**

The claims include embodiments of nucleic acids that hybridize under "stringent" conditions to SEQ ID NO:3. The specification describes stringent conditions as "such as, for example, are described in Sambrock et al..." on page 42. Not only does the specification not limit the description of stringent conditions to Sambrock et al which is but one example of said conditions, but Sambrock et al recite a variety of hybridization conditions, dependent upon application of which are considered stringent or non-stringent. The specification does not describe even so much as a single embodiment that is defined by its hybridization to SEQ ID NO:3, and the specification, lacking a description for specific hybridization conditions, lacks written description for embodiments that hybridize to SEQ ID NO:3.

### **Description of which amino acids may be substituted**

Applicants also do not describe which of the amino acids of SEQ ID NO:4 are absolutely required for the function of class 3 branching activity. Without a description of which amino acids are required, there is also a lack of description as to which amino acids would need to be modified to reduce the activity of the class 3 branching enzyme. The claims embody sequences that have as little as 50% identity to SEQ ID NO:4 which encompass a multitude of embodiments that have anywhere from 1 amino acid to 452 amino acids that are either substituted, deleted, or inserted in any combination along any length of the sequence. The literally billions of embodiments are not described sufficiently for one to determine that Applicants were in possession of a representative number of embodiments. Furthermore, there is no description of which amino acids may be substituted and which are critical to the function of the class 3 branching enzyme.

The Federal Circuit has recently clarified the application of the written description requirement. The court stated that a written description of an invention “requires a precise definition, such as by structure, formula, [or] chemical name, of the claimed subject matter sufficient to distinguish it from other materials.” *University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1568; 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The court also concluded that “naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material.” *Id.* Further, the court held that to adequately describe a claimed genus, Patent Owner must describe a representative number of the species of the claimed

genus, and that one of skill in the art should be able to “visualize or recognize the identity of the members of the genus.” *Id.*

Finally, the court held:

A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus. *Id.*

See also MPEP section 2163, page 174 of chapter 2100 of the August 2005 version, column 1, bottom paragraph, where it is taught that

[T]he claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.

See also *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ 2d 1016 at 1021, (Fed. Cir. 1991) where it is taught that a gene is not reduced to practice until the inventor can define it by "its physical or chemical properties" (e.g. a DNA sequence).

Given the claim breadth and lack of description as discussed above, the specification fails to provide an adequate written description of the genus of sequences as broadly claimed. Given the lack of written description of the genus of sequences required for making the claimed wheat grain, any method of using them, such as transforming plant cells and plants therewith, and the resultant products including the claimed transformed plant cells and plants containing the genus of sequences, would also be inadequately described. Accordingly, one skilled in the art would not have

recognized Applicant to have been in possession of the claimed invention at the time of filing. See the Written Description Requirement guidelines published in Federal Register/ Vol. 66, No. 4/ Friday January 5, 2001/ Notices: pp. 1099-1111.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 13-17 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Poulson et al (WO0170942).

The claims are broadly drawn to a genetically modified cell of any plant species, modified with any nucleic acid wherein any class 3 branching enzyme has a reduced activity in comparison with wild type plant cells, and genetically modified plant cells with any foreign nucleic acid that encodes an amino acid having as little as 50% identity with SEQ ID NO:4, or any foreign nucleic acid that merely hybridizes under unspecified conditions to SEQ ID NO:3 or a nucleic acid that encodes SEQ ID NO:4, or any antisense molecule that reduces the activity of any class 3 branching enzyme or any ribozyme, or any molecule that leads to a cosuppressive effect for any class 3 branching enzyme and vectors, plants and methods of manufacturing transgenic plants comprising the multitudes of nucleic acid molecules broadly claimed.

Poulson et al teach a genetically modified potato plant cell wherein the reduction of a glucan branching enzyme results from the antisense molecules of a starch branching enzyme I or starch branching enzyme II altering the starch composition (see in particular Example 6). The antisense molecules would inherently hybridize to SEQ ID NO:3 under stringent conditions as the conditions are unspecified by Applicants, and absent evidence to the contrary reduce the Class 3 branching enzyme activity as evidenced by the modified starch phenotype. The regeneration and other steps of manufacturing a genetically modified plant are taught on page 15 of the specification.

Claims 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Der Hoeven et al (2001 GenBank Accession BG886850).

The claims are drawn to a nucleic acid molecule coding for a protein with the enzymatic activity of a Class 3 branching enzyme, comprising a nucleic acid molecule with 70% identity to SEQ ID NO:3 or a nucleic acid molecule that hybridizes under unspecified stringent conditions to the nucleic acid of SEQ ID NO:3, or any fragments, or derivatives thereof, and wherein the enzyme is of potato.

Van De Hoeven et al teach a nucleic acid molecule that is a potato EST from a cloning vector that codes for a protein that inherently has the enzymatic activity of a Class 3 branching enzyme given that 99% identity over 640 bases with SEQ ID NO:3.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1638

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poulson et al (WO0170942) as applied to claims 1-10, 13-17 and 22 above, in view of Cooke et al (WO9634968) and further, in view of Van Der Hoeven et al (2001 GenBank Accession BG886850) as applied to claims 18-20 above.

The claims are broadly drawn to a genetically modified cell of any plant species, modified with any nucleic acid wherein any class 3 branching enzyme has a reduced activity in comparison with wild type plant cells, and genetically modified plant cells with any foreign nucleic acid that encodes an amino acid having as little as 50% identity with SEQ ID NO:4, or any foreign nucleic acid that merely hybridizes under unspecified conditions to SEQ ID NO:3 or a nucleic acid that encodes SEQ ID NO:4, or any antisense molecule that reduces the activity of any class 3 branching enzyme or any ribozyme, or any molecule that leads to a cosuppressive effect for any class 3 branching enzyme and vectors, plants and methods of manufacturing transgenic plants comprising the multitudes of nucleic acid molecules broadly claimed and the harvestable parts and propagation materials therefrom. The claims are also drawn to a nucleic acid molecule coding for a protein with the enzymatic activity of a Class 3 branching enzyme, comprising a nucleic acid molecule with 70% identity to SEQ ID NO:3 or a nucleic acid molecule that hybridizes under unspecified stringent conditions to the nucleic acid of SEQ ID NO:3, or any fragments, or derivatives thereof, and

Art Unit: 1638

wherein the enzyme is of potato and vectors comprising said nucleic acid molecule wherein the molecule is linked to regulatory sequences.

Poulson et al teach a genetically modified potato plant cell wherein the reduction of a glucan branching enzyme results from the antisense molecules of a starch branching enzyme I or starch branching enzyme II altering the starch composition (see in particular Example 6). The antisense molecules would inherently hybridize to SEQ ID NO:3 under stringent conditions as the conditions are unspecified by Applicants, and absent evidence to the contrary reduce the Class 3 branching enzyme activity as evidenced by the modified starch phenotype. The regeneration and other steps of manufacturing a genetically modified plant are taught on page 15 of the specification.

Poulson et al do not teach the nucleic acid molecule that encodes a Class 3 branching enzyme or the harvestable plant parts or propagation materials from transgenic plants comprising a nucleic acid molecule that leads to a reduced activity of a Class 3 branching enzyme.

Van De Hoeven et al teach a nucleic acid molecule that is a potato EST from a cloning vector that codes for a protein that inherently has the enzymatic activity of a Class 3 branching enzyme given that 99% identity over 640 bases with SEQ ID NO:3.

Cooke et al teach antisense constructs of starch branching enzyme A and starch branching enzyme B of potato with specific starch properties leading to a greatly reduced activity of starch branching enzyme activity (see page 30 in particular), as well as harvestable parts and propagation materials (see claims, for example).



It would have been obvious to one of ordinary skill in the art to apply the sequences of Van Der Hoeven et al to the methods of Poulson et al and Cooke et al to arrive at the desired starch phenotype as suggested by Cooke et al (see page 30 for example). Both Poulson et al and Cooke et al describe in the summary of invention background the long felt need to alter starch properties through the use of transgenic plants for industrial and agronomic uses. Given the state of the art and the teachings of Poulson et al, Van Der Hoeven et al, and Cooke et al, it would have been obvious to one of ordinary skill in the art to modify the methods taught in the prior art to practice the invention of the instant claims.

No claims are free of the prior art.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENT PAGE whose telephone number is (571)272-5914. The examiner can normally be reached on Monday-Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571)-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1638

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brent T Page

/Russell Kallis/

Primary Examiner, Art Unit 1638

June 5, 2008